

TRANSLATION OF AMENDMENT (April 02, 2004)

UNDER ARTICLE 34 OF PCT

-We amended claims 1, 3, 4, 7, 10 and 11.

-Amended pages 21 and 22 are attached.

CLAIMS

1. A method of etching, by a plasma of an etching gas in a processing vessel, a lower layer film of an organic material formed on a substrate, using an upper layer film of an Si-containing organic material as a mask, wherein
a mixed gas containing an NH_3 gas and an O_2 gas is supplied into the processing vessel as the etching gas, and
a CD shift value of etching is controlled by adjusting a flow ratio of the O_2 gas to the NH_3 gas.
2. The etching method according to claim 1, wherein
a pressure in the processing vessel is not less than 2.7 Pa and less than 13.3 Pa.
3. The etching method according to claim 1, wherein
a temperature of a support member supporting the substrate in the processing vessel is from 0 to 20°C.
4. The etching method according to claim 1, wherein
the plasma is formed between a pair of opposed electrodes disposed in the processing vessel, and
a residence time represented by V/S takes a value from 20 to 60 msec, where V (m^3) represents an effective processing space volume as a product of an area of the substrate and a distance between the electrodes, and S (m^3/sec) represents a gas exhaust velocity from the processing vessel.
5. The etching method according to claim 1, wherein
the substrate has a surface layer to be etched with the lower layer film used as a mask, the surface layer being formed under the lower layer film.
6. The etching method according to claim 1, wherein
the etching method is carried out by a capacitively coupled plasma etching system, which forms a high-frequency

electric field between a pair of opposed electrodes disposed in the processing vessel to generate the plasma.

7. A method of etching, by a plasma of an etching gas in a processing vessel, a lower layer film of an organic material formed on a substrate, using an upper layer film of an Si-containing organic material as a mask, wherein

a mixed gas containing an NH_3 gas and an O_2 gas is supplied into the processing vessel as the etching gas, and

a flow ratio of the O_2 gas to the NH_3 gas is from 0.5 to 20%.

8. The etching method according to claim 7, wherein the flow ratio of the O_2 gas to the NH_3 gas is from 5 to 10%.

9. The etching method according to claim 7, wherein a pressure in the processing vessel is not less than 2.7 Pa and less than 13.3 Pa.

10. The etching method according to claim 7, wherein a temperature of a support member supporting the substrate in the processing vessel is from 0 to 20°C.

11. The etching method according to claim 7, wherein the plasma is formed between a pair of opposed electrodes disposed in the processing vessel, and a residence time represented by V/S takes a value from 20 to 60 msec, where V (m^3) represents an effective processing space volume as a product of an area of the substrate and a distance between the electrode, and S (m^3/sec) represents a gas exhaust velocity from the processing vessel.

12. The etching method according to claim 7, wherein the substrate has a surface layer to be etched with the lower layer film used as a mask, the surface layer being formed